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AIRBORNE OBSERVATIONS OF THE INFRARED EMISSION BANDS

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Earlier airborne studies of the infrared bands between 5 and 8 microns have now been extended to a sample of southern sources selected from the IRAS LRS atlas. The correlation between the strongest bands at 6.2 and 7.7 microns is now based on a total sample of 40 sources and is very strong. A new emission band at 5.2 microns, previously predicted for PAHs, is recognized in 27 sources; it too correlates with the dominant 7.7 micron band, showing that the 5.2 micron feature also belongs to the "generic" spectrum of PAH features at 3.3, 5.6, 6.2, 6.9, 7.7, 8.7, 11.3, and 12.7 microns.

We have sufficient sources now to define the relative strengths of most of these bands in three separate nebular environments: planetaries, HII regions, and reflection nebulae. We detect significant variations in the generic spectra of PAHs in these different environments which are echoed by variations in the exact wavelength of the strong "7.7" micron peak.

Our earlier suggestion that, in planetaries, the fraction of total emission observed by IRAS that is carried by the PAH emissions is correlated with nebular gas-phase C/O ratio is supported by the addition of newly-observed southern planetaries, including the unusually carbon-rich [WC10] nebular nuclei. These [WC10] nuclei also exhibit a strong "plateau" of emission linking the 6.2 and 7.7 micron features.